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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,881	06/20/2001	Stuart Squires	45722.2	1537

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EDWARD YOO C/O BENNETT JONES  
1000 ATCO CENTRE  
10035 - 105 STREET  
EDMONTON, ALBERTA, AB T5J3T2  
CANADA

EXAMINER

KERNS, KEVIN P

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/681,881

Applicant(s)

SQUIRES ET AL.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/11/05, 5/10/05, 6/15/05, and 8/10/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 3,6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 3 is objected to because of the following informalities: in the 1<sup>st</sup> line, "an" should be changed to "a" before "horizontally". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-220331 (complete translation of Japanese document provided with this Office Action) in view of Ashbrook et al. (US 4,722,799).

JP 5-220331 discloses a spray tower type wet flue gas desulfurization apparatus, in which the apparatus includes a closed reaction vessel having a reverse weir (partition plate 17) that divides the vessel into two chambers, such that the vessel further includes a gas inlet 1 in one chamber and a gas outlet 2 in another chamber, a circulating tank 9 near the suction provided by a recirculation pump 9, and contact zones (15,16) that are equipped with nozzles (7,12) of spray headers (6,11), serving as sprinkler bars (abstract; paragraphs [0005]-[0019] of translation; and Figures 1 and 2).

A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Further, the examiner notes that intended use limitations, such as “for containing a treatment fluid comprising aqueous and gaseous ammonia”, do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating to the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.” See MPEP 2114 and 2115.

JP 5-220331 does not specifically disclose a source of solid iron, a baffle system, a condenser, and at least two reversible weirs.

However, Ashbrook et al. disclose a natural gas desulphurizing apparatus and method, in which the apparatus includes a vertical tower A (having an inlet 10 for

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sour/acid gas and an outlet conduit 20) that includes interior baffle systems (trays 12 made from steel in one embodiment) and a sprayer bar 14 with associated recirculation pump 16 and sprayer conduit 18, with the vertical tower A not needing to be corrosion resistant due to a protective coating of red iron oxide (source of solid iron) on the interior of tower A and other components; a horizontally elongate tower B that includes two substantially vertical reverse weirs 34 that divide tower B into multiple chambers that hold red and black iron oxide compounds in solution, elemental sulfur, and hydrogen sulphide to be scrubbed from the raw natural gas; a condenser (degassing means 26) connected upstream of the gas inlet; and a recycling means 40, such that these additional components on an acid gas desulphurizing apparatus are advantageous for obtaining a desulphurization system that operates continuously, safely, economically, and with low maintenance, while more effectively removing sulphuric gases from natural gas (abstract; column 1, lines 11-16; column 2, lines 1-11 and 19-60; column 3, lines 4-68; column 4, lines 1-54 and 64-68; column 5, lines 1-26 and 38-68; column 6, lines 1-5 and 47-68; column 7, lines 1-25; and Figures 1-3). One of ordinary skill in the art would have recognized that the material of the reaction vessel would include low carbon steels and/or other alloys that include iron, due to the abundance and hence low cost of such materials. Furthermore, the inner surfaces of steel/iron alloy vessels would inherently show some degree of corrosion (e.g. loss of vessel/reactor mass due to reaction with acid gas) after extended use. As a result, the source of solid iron would not necessarily have to be solely from iron oxide, as one of ordinary skill in the art would recognize.

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the spray tower type wet flue gas desulfurization apparatus, as disclosed by JP 5-220331, by adding the additional features that include a single vessel having a source of solid iron and divided by two reversible weirs, a baffle system, and a condenser, as taught by Ashbrook et al., in order to obtain a desulphurization system that operates continuously, safely, economically, and with low maintenance, while more effectively removing sulphuric gases from natural gas (Ashbrook et al.; column 1, lines 12-16; column 2, lines 1-11; and column 7, lines 1-10).

***Allowable Subject Matter***

5. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach or suggest an apparatus that includes all of the limitations of claims 1 and 4, and further including a baffle flexing means (dependent claim 6).

***Response to Arguments***

7. The examiner acknowledges the applicants' amendments of 3/11/05, 5/10/05, 6/15/05, and 8/10/05. All objections to the drawings, abstract, and specification have been overcome by the amendments. However, the objection to claim 3 remains (see paragraph 1). The applicants have cancelled non-elected claims 21-29. Claims 6 and 7 remain as allowable subject matter (see paragraphs 5 and 6). Claims 1-11 are currently under consideration in the application.

8. Applicants' arguments with respect to claims 1-5 and 8-11 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 9/19/05*  
Primary Examiner  
Art Unit 1725

KPK  
kpk  
September 19, 2005